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10/595,137

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Per Anders Stenberg

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EXAMINER

PITT, BRYAN W

ART UNIT

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2617

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/595,137	<b>Applicant(s)</b> STENBERG ET AL.	
	<b>Examiner</b> Bryan Pitt	<b>Art Unit</b> 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 33 and 34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03 March 2006</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The listing of references in the Search Report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Therefore, the references cited in the Search Report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

Specifically, copies of the listed foreign patents have not been provided, therefore the listed foreign patents have not been considered.

***Drawings***

2. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Objections***

3. Claim 17 is objected to because of the following informalities: the word "respectiv" in line 9 is misspelled. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 1 recites the limitation "the parameter" in lines 7-8. It is unclear whether this refers to the parameter reflecting propagation delay or the at least one parameter reflecting received signal level. For the purpose of examination, it is assumed to refer to the at least one parameter reflecting signal level.

***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-4, 6-13, 17-20, and 22-29 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6,300,905 to Chen et al.

Regarding claim 1, Chen teaches a method of positioning a radio transmitter (i.e. a method for determining a location of a wireless mobile unit (MU); Col. 2, line 66 to Col. 3, line 14) comprising

determining distance to a receiver of known position (i.e. the base station (BS) is located at a known position; Col 4, lines 38-54) according to a parameter reflecting propagation delay time (i.e. distance is determined from the roundtrip delay of an RF signal received at the BS from the MU; Col. 3, line 54 to Col 4, line 13) and

determining direction from the receiver to the transmitter from a respective at least one parameter reflecting received signal level in a cell/sector where the transmitter is camping or being served and signal level in a co-sited cell/sector (i.e. the angle of arrival (AOA, i.e. direction) is determined by measuring a received signal amplitude (signal level) difference between the antenna components of a multi-sector antenna, therefore between a served sector and a co-sited sector; Col. 3, line 54 to Col 4, line 4, Col. 5, lines 50-64),

the parameter determining direction from stored assisting position data (i.e. Chen teaches using a lookup table (LUT) to determine the AOA (direction) from the amplitude differences of antenna components; Col. 3, line 54 to Col 4, line 4, Col. 5, line 65 to Col. 6, line 30).

Regarding claim 2, Chen teaches the method according to claim 1, wherein the assisting position data is classified in intervals of one or more parameters (i.e. Chen teaches the amplitude difference to AOA LUT comprises discrete angle values, therefore data classified in intervals of angle values; Col. 6, lines 16-28).

Regarding claim 3, Chen teaches the method according to claim 2 wherein the position data in each interval is averaged over the interval of each of the one or more parameters (i.e. Chen teaches applying a moving average to obtain smooth antenna patterns, therefore averaging over the interval; Col. 6, lines 16-28).

Regarding claim 4, Chen teaches the method according to claim 3 wherein the one or more parameters include received signal level (i.e. Chen teaches the LUT is used to determine angles from received signal amplitude differences, therefore received signal levels; Col. 5, line 65 to Col. 6, line 8).

Regarding claim 6, Chen teaches the method according to claim 3 wherein the stored assisting position data is average position data (i.e. Chen teaches applying a moving average to the angles in the LUT (stores assisting position data), therefore average position data; Col. 6, lines 16-28).

Regarding claim 7, Chen teaches the method according to claim 1 wherein the assisting position data is GPS or other satellite positioning system position data (i.e. Chen teaches that the measured signal levels of the LUT (stored assisting position data) are combined with GPS information from a test mobile, therefore GPS data; Col. 6, lines 4-15).

Regarding claim 8, Chen teaches the method according to claim 7 further comprising, receiving the assisting position data from one or more of a plurality of subscriber receivers in a public mobile radio communication system (i.e. Chen teaches that the LUT (stored assisting position data) comes from measurements of a test mobile in a CDMA cell, therefore receiving from a subscriber receiver in a public mobile radio communication system; Col. 6, line 58 to Col. 7, line 3).

Regarding claim 9, Chen teaches the method according to claim 1 wherein the co-sited cell/sector is at least one of the cells/sectors being immediate neighbors of the cell where the transmitter is camping or being served (i.e. Chen teaches that the sectors are those of a three sector BS, therefore immediate neighbors; Col. 3, line 54 to Col 4, line 4).

Regarding claim 10, Chen teaches the method according to claim 1 wherein direction to the transmitter is determined by forming a linear scale ratio of or dB-scale difference between the neighbor cell/sector received level and received level of the cell/sector where the transmitter is camping or being served (i.e. Chen teaches determining distance via the difference (in dB) between signal levels received by components of multi-sector antenna; Col. 3, line 54 to Col 4, line 4).

Regarding claim 11, Chen teaches the method according to claim 1 wherein determination of transmitter positioning includes cell/sector identity (i.e. Chen teaches determining position of MU through received signal levels at different sector antennas; Col. 3, line 54 to Col 4, line 4. Fig. 6B shows sector antennas 42, 44, and 48 that serve sectors 52, 54, 58 respectively, therefore including sector identities).

Regarding claim 12, Chen teaches the method according to claim 1 wherein the received signal level is averaged prior to forming a basis for positioning (i.e. Chen teaches applying a moving average to the angles in the LUT (stores assisting position data), therefore average position data; Col. 6, lines 16-28).

Regarding claim 13, Chen teaches the method according to claim 12 wherein the average is formed in a network control element (i.e. Chen teaches a central controller CPU that receives the RF signals and determines the time delay, angle, and location, therefore formed in a network control element; Col. 4, line 55 to Col. 5, line 4).

Regarding claim 17, Chen teaches a device for positioning a radio transmitter (i.e. an apparatus for determining a location of a wireless mobile unit (MU); Col. 2, line 66 to Col. 3, line 14) comprising:

processing means for determining:

distance to a receiver of known position (i.e. the base station (BS) is located at a known position; Col 4, lines 38-54) according to at least one parameter reflecting propagation delay time (i.e. distance is determined from the roundtrip delay of an RF signal received at the BS from the MU; Col. 3, line 54 to Col 4, line 13);

direction from the receiver to the transmitter from a respective parameter reflecting received signal level in a cell/sector where the transmitter is camping or being served and signal level in a co-sited cell/sector (i.e. the angle of arrival (AOA, i.e. direction) is determined by measuring a received signal amplitude (signal level) difference between the antenna components of a multi-sector antenna, therefore



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between a served sector and a co-sited sector; Col. 3, line 54 to Col 4, line 4, Col. 5, lines 50-64),

the respective parameter determining direction from stored assisting position data (i.e. a lookup table (LUT) is used to determine the AOA (direction) from the amplitude differences of antenna components; Col. 3, line 54 to Col 4, line 4, Col. 5, line 65 to Col. 6, line 30); and

storage means for storing of assisting position data in relation to the at least one parameter (i.e. the LUT is stored in memory; Col. 6, lines 9-30).

Regarding claim 18, Chen teaches the device according to claim 17 wherein the assisting position data is classified in intervals of one or more parameters (i.e. Chen teaches the amplitude difference to AOA LUT comprises discrete angle values, therefore data classified in intervals of angle values; Col. 6, lines 16-28).

Regarding claim 19, Chen teaches the device according to claim 18 further comprising processing means for averaging position data in each interval over the interval of each of the one or more parameters (i.e. Chen teaches applying a moving average to obtain smooth antenna patterns, therefore averaging over the interval; Col. 6, lines 16-28).

Regarding claim 20, Chen teaches the device according to claim 19 wherein the one or more parameters include received signal level (i.e. Chen teaches the LUT is used to determine angles from received signal amplitude differences, therefore received signal levels; Col. 5, line 65 to Col. 6, line 8).

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Regarding claim 22, Chen teaches the device according to claim 19 wherein the stored assisting position data is average position data (i.e. Chen teaches applying a moving average to the angles in the LUT (stores assisting position data), therefore average position data; Col. 6, lines 16-28).

Regarding claim 23, Chen teaches the device according to claim 17 wherein the assisting position data is GPS or other satellite positioning system position data (i.e. Chen teaches that the measured signal levels of the LUT (stored assisting position data) are combined with GPS information from a test mobile, therefore GPS data; Col. 6, lines 4-15).

Regarding claim 24, Chen teaches the device according to claim 17, wherein for a public mobile radio communication system with a plurality of subscriber receivers, the assisting position data is received from one or more subscriber receivers (i.e. Chen teaches that the LUT (stored assisting position data) comes from measurements of a test mobile in a CDMA cell, therefore receiving from a subscriber receiver in a public mobile radio communication system; Col. 6, line 58 to Col. 7, line 3).

Regarding claim 25, Chen teaches the device according to claim 17 wherein the co-sited cell/sector is at least one of the cells/sectors being immediate neighbors of the cell where the transmitter is camping or being served (i.e. Chen teaches that the sectors are those of a three sector BS, therefore immediate neighbors; Col. 3, line 54 to Col 4, line 4).

Regarding claim 26, Chen teaches the device according to claim 17 wherein direction to the transmitter is determined by forming a ratio of the neighbor cell/sector

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received level and received level of cell/sector where the transmitter is camping or being served (i.e. Chen teaches determining distance via the difference (in dB) between signal levels received by components of multi-sector antenna; Col. 3, line 54 to Col 4, line 4).

Regarding claim 27, Chen teaches the device according to claim 17 wherein the processing means further comprises including cell/sector identity determination of transmitter positioning (i.e. Chen teaches determining position of MU through received signal levels at different sector antennas; Col. 3, line 54 to Col 4, line 4. Fig. 6B shows sector antennas 42, 44, and 48 that serve sectors 52, 54, 58 respectively, therefore including sector identity determination).

Regarding claim 28, Chen teaches the device according to claim 17 wherein the processing means further comprises forming a time average of received signal level prior to forming a basis for positioning (i.e. Chen teaches applying a moving average to the angles in the LUT (stores assisting position data) to compensate for time-to-angle non-uniformity, therefore forming a time average of received signal level; Col. 6, lines 16-28).

Regarding claim 29, Chen teaches the device according to claim 28 wherein the time average is formed in a network control element (i.e. Chen teaches a central controller CPU that receives the RF signals and determines the time delay, angle, and location, therefore a network control element; Col. 4, line 55 to Col. 5, line 4).

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 5 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of US 2004/0067759 to Spirito et al.

Regarding claim 5, Chen teaches the method according to claim 3, but does not specifically teach wherein the one or more parameters include timing advance.

However, at the time the invention was made the preceding limitation was known in the art of communications.

Spirito teaches a device and method for locating a network element in a cellular network where a Location Server makes real-time location estimates using Timing Advance (TA) and a look-up table (LUT); paragraph 0189. Using the LUT allows for fast location estimates; paragraph 0190. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the lookup tables of Chen so as to include TA values as taught by Spirito in order to benefit from fast location estimates.

Regarding claim 21, Chen teaches the device according to claim 19, but does not specifically teach wherein the one or more parameters include timing advance. However at the time the invention was made the preceding limitation was known in the art of communications.

Spirito teaches a device and method for locating a network element in a cellular network where a Location Server makes real-time location estimates using Timing Advance (TA) and a look-up table (LUT); paragraph 0189. Using the LUT allows for fast location estimates; paragraph 0190. Therefore it would have been obvious to one of

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ordinary skill in the art at the time of invention to modify the lookup tables of Chen so as to include TA values as taught by Spirito in order to benefit from fast location estimates.

10. Claims 14-16 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Official Notice.

Regarding claim 14, Chen teaches the method according to claim 13 wherein the network control element is an entity most closely connected to the receiver entity (i.e. Chen teaches that the central controller CPU is in communication with each antenna sector of the base station (receiver entity), therefore an entity most closely connected to the receiver entity; Col. 4, line 55 to Col. 5, line 4).

Chen does not specifically teach that the network control element is connected to the receiver entity over a standardized interface; however, Examiner takes Official Notice that at the time the invention was made it was well known in the art of communications to use standardized interfaces between a base station and a base station controller. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the location finding system of Chen to include a standardized interface between the base station and its controller because it was well known in the art to use standardized interfaces.

Regarding claim 15, the combination of Chen and Official Notice teaches the method according to claim 14 wherein the entity most closely connected to the receiver is a base station controller (i.e. Chen teaches that the central controller CPU is in communication with the BS (receiver), therefore a base station controller; Col. 4, line 55 to Col. 5, line 4).

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Regarding claim 16, the combination of Chen and Official Notice teaches the method according to claim 14 wherein the entity most closely connected to the receiver is a radio network controller (i.e. Chen teaches that the central controller CPU is in communication with the BS (receiver), therefore a base station controller; Col. 4, line 55 to Col. 5, line 4. Base station controllers are known equivalents of radio network controllers).

Regarding claim 30, Chen teaches the device according to claim 29 wherein the network control element is an entity most closely connected to the receiver entity (i.e. Chen teaches that the central controller CPU is in communication with each antenna sector of the base station (receiver entity), therefore an entity most closely connected to the receiver entity; Col. 4, line 55 to Col. 5, line 4).

Chen does not specifically teach that the network control element is connected to the receiver entity over a standardized interface; however, Examiner takes Official Notice that at the time the invention was made it was well known in the art of communications to use standardized interfaces between a base station and a base station controller. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the location finding system of Chen to include a standardized interface between the base station and its controller because it was well known in the art to use standardized interfaces.

Regarding claim 31, the combination of Chen and Official Notice teaches the device according to claim 30 wherein the entity most closely connected to the receiver is a base station controller (i.e. Chen teaches that the central controller CPU is in

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communication with the BS (receiver), therefore a base station controller; Col. 4, line 55 to Col. 5, line 4).

Regarding claim 32, the combination of Chen and Official Notice teaches the device according to claim 30 wherein the entity most closely connected to the receiver is a radio network controller (i.e. Chen teaches that the central controller CPU is in communication with the BS (receiver), therefore a base station controller; Col. 4, line 55 to Col. 5, line 4. Base station controllers are known equivalents of radio network controllers).

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 7,035,651 to Schreiner et al. teaches calculating the angle of arrival of a received signal using a single base station where the received power level ratios from various sector antenna are used to determine the angle.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bryan Pitt whose telephone number is (571) 270-7466. The examiner can normally be reached on Monday - Friday 8:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Eng can be reached on (571) 272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/George Eng/  
Supervisory Patent Examiner, Art Unit 2617

/B. P./  
Examiner, Art Unit 2617